NONPOINT SOURCE TIMES

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Stream Habitat Walks The Latest Assessment Tool

Introduction

Beginning this past Spring, the Maine DEP Stream Team Program staff began training and working with Stream Team groups on Stream Habitat Walks. Stream Teams are individuals, groups, and established stream and river groups that have signed up with the Stream Team Program. The Stream Team Program was started in 2000 to advance education about as well as protection and restoration of streams and rivers. The primary goals of the program are to promote citizen stewardship and to foster networking and partnership among stewardship groups. Efforts toward these goals include creation of networking tools to include website and newsletter as well as establishment of a library of video and publication resource materials. Stream Team Program staff include a Director and Americorps Program staff in the Portland Office, and staff in the Augusta and Bangor Office, who are all available to provide direct assistance to Stream Team groups. The Stream Habitat Walk training is the first formal training offered by the Program.

What is a Stream Habitat Walk?

There are several Stream Walk methodologies that have been developed by different States and river organizations. Maine Stream Team staff have adopted the method found in "EPA-Volunteer Stream Monitoring: A Methods Manual" (November 1997), although some adjustments were made to tailor the activity toward specific needs in Maine. The method outlines three levels of stream habitat assessment and biological monitoring-each subsequent level being increasingly complex and requiring increasing guidance and training.

(Continued on page 2)

Inside This Issue

MainE Stream Summit (MESS 2003)

Mark your calendars for Wednesday March 26, 2003 to attend the first MainE Stream Summit supporting science and stewardship of Maine's streams and rivers.

A one day gathering of citizens and school groups sharing their monitoring research, restoration and other stewardship on local streams and rivers.

Organized by Maine DEP, Bowdin College, The Maine Stewardship Alliance and the University of Maine.

For more information please contact MaryLee Haughwout at 207/822-6427 or MaryLee.A.Haughwout@state.me.us

(Continued from page 1)

The first level is the Stream Habitat Walk-the level of assessment presently supported by the Stream Team Program. This involves walking the stream segment or reach and answering a set of questions. Observations about stream and adjacent stream habitat conditions are made. The volunteers also make an assessment of possible impacts to the stream from activities in the watershed. Lastly, general observations about observed biological life (fish, algae, and plants present) are made. This assessment requires a minimal level of training provided by Stream Team Program staff. The training consists of a slideshow and field training, usually completed in a four hour training session. (The next two levels of assessment are the Streamside Biosurvey and Intensive Biosurvey. The Streamside Biosurvey includes the basic Stream Habitat Walk and an assessment of collected macroinvertebrates identified to order or family level. The Intensive Biosurvey includes a more comprehensive habitat assessment and an assessment of macroinverbrates, identified in the lab to family level. These levels require a higher level of involvement from a Biologist and higher level of training on macroinvertebrate taxonomy.)

Why do a Stream Walk?

Primary reasons for engaging Stream Teams in doing Stream Walks center on its value as both educational/ stewardship and assessment tools. Through the training and by doing the habitat walk-volunteers learn about stream ecology, how streams are assessed and what the concerns are around streams. Stream team volunteers ranging from students who may know very little about stream ecology to more knowledgeable volunteers will all likely learn from being involved in the Stream Walk process. Enlightened and interested volunteers are in turn better stewards of the resource.

A Stream Walk is a good step in data gathering on a stream. First, there is some value in just getting out on a stream and become familiar with the resource. Familiarity with a stream aids in making sense of any data or information and further generates appreciation and interest. Second, it is a useful component of an overall monitoring and protection/restoration plan. Using the standardized set of questions in the Stream Walk form, volunteers make observations about habitat conditions and impacts (activities or conditions) that may be affecting the stream. This serves as a documentation of baseline or current conditions. Identification of conditions and issues aid in developing a monitoring plan and goals for the stream. Third, problem impacts identified in the Walk provide an inventory of sites that Teams and others may address for restoration.

What has been done and next steps

Since the Spring of 2002, Stream Team Program staff have trained seven Stream Team groups and one lake association. The streams involved include Great Works River (Berwick), Bobbin Brook (Auburn), Davis Stream (Jefferson), St. George River (Searsmont), Sheepscot River (Alna), Union River (Ellsworth), and Eddie Brook (Mt. Desert Island). Three more streams have already been scheduled for 2003: Tannery Brook (Gorham), Otter Brook (Windham) and Trout Brook (South Portland). Once Stream Teams have completed their assessments; they may send their data to the Stream Team program staff. They will summarize the information into a report and make recommendations for next steps.

If you would like to know more about Stream Walks, contact any of the Stream Team Program staff: Jeff Varricchione, Portland, coordinator [(207)-822-6427]; Mary Ellen Dennis, Augusta [(207)-287-7729]; Mark Whiting, Bangor [(207)-941-4566].

They Bought the Farm

by Mike Herz, President

This is a story about people – people who love their land and who have done something wonderful to protect it. In 1941, shortly after they were married, Norman Chase and his wife Lydia acquired a farm on the Sheepscot River in Whitefield. Over the years, Norman and his wife Lydia worked the dairy farm and raised their 5 children. The farm is well known to area residents and travelers of Route 126 as the "Happy Farm" which is painted in large white letters on the side of the barn.

When Norman died, the rest of the family was confronted with the difficult task of deciding what to do with the Happy Farm. Although none of Norman and Lydia's children were farmers, a nephew, Pat and his wife Robin, who were already operating another dairy farm in Whitefield, expressed interest. Unfortunately, they did not have the financial ability to buy the whole farm.

The Happy Farm as seen from Route 126 in Whitefield.

As is often the case, though, timing is everything! The federal government had just listed Atlantic salmon as an endan-

ntinued on page 6)

Phosphorus-free Fertilizer, Maine and Beyond

Increase in sales

Maine Department of Environmental Protection, DEP, has been promoting the voluntary use of phosphorus-free fertilizer to homeowners in Maine since 1999. At that time, most consumers and retailers had never heard of phosphorus-free fertilizers. Maine was the first state to enact legislation to reduce the use of fertilizers containing phosphorus. Since 1999, sales of phosphorus-free fertilizer have continued to increase. The year 1999 retail sales were 56,445 pounds, year 2000 sales were 97,225 pounds and year 2001 sales were 134,590 pounds.

The number of phosphorus-free retailers and applicators continues to grow. A total of 20 new retailers or applicators joined the program in 2002. Some of these new participants heard about the program by attending meetings or visiting DEP displays at the flower shows or educational programs. The awareness about this type of fertilizer is at a level that DEP now gets frequent inquiries from manufacturers, applicators and retailers from Maine and other states.

Newspaper Advertising

"... phosphorus-free fertilizer is becoming a popular tool to reduce pollution to our surface waters"

In 1999 and 2000 DEP advertised in the Home and Garden sections of local papers. The ad listed where to buy the fertilizer. In 2001 DEP advertised once in each of the four daily newspapers. This ad had the same content as the previous years with the addition of a $2 rebate coupon with questions about fertilizing habits. Unfortunately, only one person sent in the coupon for the rebate. A good response rate for newspaper ads with coupons is 2%. This poor response most likely is due to buyers not seeing the newspaper ad and/or not taking the time to send in the coupon.

Radio Ads

In addition to the newspaper ads, DEP ran 30 second radio ads on two stations for two weeks around Memorial Day in the year 2000. In 2001 DEP increased the radio coverage to reach more lake areas in May. In spite of the fact that the advertising budget was doubled for the year 2001, increased funds did not translate into a similar increase in sales. This is most likely due to the relatively small advertising budget. The 2001 expenditure was nowhere near the amount needed to have a measurable effect on a commercial market statewide in Maine. Certainly, this advertising helped raise the awareness in Maine and did affect some consumers' decisions.

In-store Poster

It seemed that the 2002 advertising funds could be better spent in the stores, at the point of sale. In addition there has been concern that mass advertising might encourage people who do not fertilize their lawns to start fertilizing with phosphorus-free fertilizer, which does contain nitrogen and other nutrients that can also impact waterbodies. The initial stakeholder group and store managers had expressed an interest in having a point of sale poster. DEP created a new full color 8" by 11" poster for 2002. The poster included tear off coupons for a free state park pass with the purchase of phosphorus-free fertilizer. So far only four coupons have been returned.

DEP will survey the retailers on the use and effectiveness of the posters and perhaps get ideas for improvements for 2003.

(Continued on page 4)

Soil & Water Conservation Society Call For Papers

The deadline to submit an abstract for presentation at the 2003 Soil and Water Conservation Society annual conference has been extended to December 13, 2002. Submissions are being taken via the SWCS website at www.swcs.org/t_what_callforpapers03.htm (Additional information can be found at this site.)

Anyone who is interested in presenting a poster, an oral presentation in a breakout session, or conducting a special concurrent session or workshop should submit an abstract. The Society's program committee can then determine the content for the upcoming conference.

The 2003 annual conference, held July 26-30, 2003 in Spokane, Washington, will focus on four key topics: 1) Integrated Watershed and Basin Management, 2) Water Supplies for Ecology and Economy, 3) Grassland Health for Sustainable Production and Biological Diversity, and 4) Air Quality for Public Health and Economic Vitality. Check the website for more details!

(Continued from page 3)

Fertilizer Applicators
Although the original legislation was targeted towards retail sales, focus has been expanded to include fertilizer applicators. This market has increased dramatically. In the year 2000, applicators reported using 363,600 pounds, and for 2001 they used 2,401,550 pounds. This is an increase of 6.6 times from 2000 to 2001. This area shows much promise and may be a result of the advertising campaign. Some of these applicators contacted DEP once they heard about the phosphorus-free campaign saying they had been applying phosphorus-free for several years. Many applicators have increased their use to appear more environmentally friendly or respond to a growing environmentally aware customer base. Other applicators have heard about the program through our display at the annual meeting of the Maine Landscape and Nurserymen's Association and other flower shows.

In summary, there have been steady increases in sales in phosphorus-free fertilizer over the last four years. The increases are starting to slow in the retail, do-it-yourself market. It seems that we have educated the lake associations, and the environmentally aware consumers. Unfortunately, we can not compete with the marketing efforts of the large fertilizer producers like Scotts who have national advertising budgets comparable to the entire DEP budget. An attempt to break into the Scotts market share would probably not be an effective use of DEP's limited phosphorus-free budget.

Efforts in Other States
When this campaign began in 1999, Scotts refused to produce a phosphorus-free fertilizer for the consumer market. They claimed that the phosphorus did not migrate off site. Furthermore, they threatened to come to the Maine legislature to repeal our voluntary phosphorus-free fertilizer program. This summer, a Scotts scientist contacted DEP and questioned some of the run off data for fertilizers that have been conducted by Dr. Bannerman in Wisconsin and other scientists. There was a concern that Scotts might attempt to squelch the phosphorus-free campaign in Maine. It was welcome news to hear that Scotts is now offering a phosphorus-free fertilizer for retail markets in Minnesota. This was obviously in response to the new law in Minnesota excerpted here:

"PHOSPHORUS LAWN FERTILIZER USE RESTRICTIONS - Starts January 1, 2004
Lawn fertilizer is restricted to **0% phosphate** (P2O5) content in the seven county Twin Cities metro area, **3% phosphate** (P2O5) content in other areas of the state **unless** it is for a new lawn, or a soil or tissue test shows a phosphorus need. In those cases, lawn fertilizers with higher phosphate content can be used."

Many other states are in the process of drafting regulations and recommendations for use of phosphorus-free fertilizer. Some states are considering innovative schemes like: taxing fertilizer containing phosphorus; outlawing all phosphorus fertilizers in certain at risk watersheds; organizing soil test clinics; contracting with Chem Lawn to use only phosphorus-free fertilizer; requiring a soil test and using the recommendation like a drug prescription, in order to purchase fertilizer containing phosphates. To say the least phosphorus-free fertilizer is becoming a popular tool to reduce pollution to our surface waters. To find out where you can purchase phosphorus-free fertilizer or to learn more about Maine's program visit our web site: http://www.state.me.us/dep/blwq/doclake/fert/phospage.htm

Christine Smith, Lakes Education Coordinator, Maine Department of Environmental Protection, 207/287-7734 or Christine.P.Smith@state.me.us.

EPA Reports 2000 National Water Quality Inventory

The U.S. Environmental Protection Agency today released its biennial national summary of water quality, based on water monitoring findings reported by the states, territories, jurisdictions and tribes in 2000 under Section 305(b) of the Clean Water Act. The information in this report applies only to the waters that were assessed for one or more of the uses, such as swimming, fishing, and fish consumption, designated for them by the states.

States assessed 19 percent of the nation's 3.7 million total river and stream miles, 43 percent of its 40.6 million acres of lakes, ponds and reservoirs, and 36 percent of its 87,300 estuary square miles for this report. EPA reports that 39 percent of assessed river and stream miles, 45 percent of assessed lake acres, and 51 percent of assessed estuary square miles in the nation were found to be impaired for one or more uses.

EPA found that the percentage of assessed river/stream and estuary waters found to be impaired has increased somewhat from the last report in 1998, although that difference is more likely due to changes in assessment approaches than actual water quality changes. Many states are choosing to use higher quality data than in the past in making their assessments, discarding older or less quality assured data. They are also moving toward more comprehensive examination of fish tissue and issuing statewide advisories limiting the consumption of certain species of

(Continued on page 8)

Daigle Pond 319 All Wrapped Up

Daigle Pond, located within New Canada Plantation, Aroostook County, Maine, was created in 1874 when a dam was constructed for the purpose of powering a sawmill on Daigle Brook. The mill was in operation, and the dam maintained, until the mid 1950's. The resulting Pond, itself, was approximately 36 acres in size, and today consists of two basins connected by a causeway culvert. Daigle Pond's entire watershed is approximately 1.6 square miles in size, and ultimately flows into Cross Lake, a Maine Department of Environmental Protection (MDEP) priority water body.

During the past 20 years, water quality within Daigle Pond has deteriorated, resulting in declining recreational, wildlife, and aesthetic values. This visible decline in water quality prompted local residents to conduct a Watershed Survey in the early 1990's, in order to identify some of the sources of pollution contributing to this decline. The survey results yielded important information regarding the types of Non-Point Source (NPS) Pollution occurring there; specifically, the survey identified 47 separate problem sites, some of which were corrected prior to the onset of the Daigle Pond Demonstration Project.

In an effort to address many of these 47 NPS sites, the Daigle Pond Restoration Committee, as local residents became known, began partnering with the St. John Valley Soil & Water Conservation District (SWCD) in applying for the Environmental Protection Agency's (EPA) Section 319 funding, administered by Maine DEP, for the purpose of reducing NPS pollution within the watershed. In partnership with the SWCD, the Natural Resources Conservation Service (NRCS), the Town of New Canada, Maine Forest Service (MFS), and other agencies, the Restoration Committee was successful in applying for the grant, and over the past few years, has worked on several projects covering a variety of land uses within the watershed.

In 1997, upon approval of the 319 grant, the Restoration Committee began gearing up for a lot of donated labor, materials, and general camaraderie in getting the Daigle Pond Project on the ground. Fort Kent Cub Scouts helped kick off the Project by volunteering to plant a vegetative buffer around the northern perimeter of the pond, in an area fenced off by the Caron family to exclude livestock from the water. The initial buffer planting included such species as spruce, willow, pine, and poplar, all species that can withstand wet soils and aid in filtering out soil and nutrients from the active pasture land above. A second buffer planting consisting of willow, cranberry, and spirea, helped to extend the original buffer in both length and depth.

Community surrounding Daigle Pond

One of the big projects completed early on in the implementation phase of the grant, included the

(Continued on page 6)

Call For Abstracts

Maine Water Conference 2003

The Maine Water Conference (MWC) was founded in 1994 by the Water Research Institute (now the Senator George J. Mitchell Center) as an annual forum for water resource professionals, consultants, citizens, researchers, students, regulators, and planners to exchange information and present new findings on water resources issues in Maine. MWC 2003 will take place April 17, 2003, at the Augusta Civic Center.

The MWC Organization Committee is seeking abstracts for presentation in the following proposed sessions. Please send an abstract (1 page limit) to: MWC Organization Committee, Senator George J. Mitchell Center, 102 Norman Smith Hall, University of Maine, Orono, ME 04469. FMI www.umaine.edu/WaterResearch Deadline December 18, 2002.

Session topics

- Sprawl and Water Resources
- Stormwater and Waste Water Issues.
- Water Contamination and Remediation-Case Studies
- Current Water Research in Maine
- How Beaches Work
- Water Education Round Table.

(Continued from page 2)

gered species and the Sheepscot Valley Conservation Association had recently embarked on its Atlantic salmon protection program. More importantly, the U.S. Fish & Wildlife Service had identified the river adjacent to the Happy Farm as prime salmon spawning and nursery habitat and a priority for protection. Phil Gerard, SVCA's Salmon Habitat Protection Coordinator, had done an analysis of the Sheepscot River watershed and identified several focus areas that combined large properties with good salmon habitat. The farm was in one of the focus areas and therefore high on the list for protection.

Phil and SVCA Board Member Bambi Jones worked with Pat and Robin to discover ways that the SVCA's goal of habitat protection could help the Chases' achieve their goal of ownership of the Happy Farm. They realized that a conservation easement might be the solution. A conservation easement is a flexible tool that protects land while leaving it in private ownership. The easement is held by a qualified non-profit organization like the Sheepscot Valley Conservation Association who ensures that the conditions of the easement are met over time. In this case, it meant that the farm could continue to operate while restricting further development and protecting the waterfront. Realizing it was such a good fit, Phil and Bambi went to work to put together the pieces.

The result of all their efforts was a grant from the National Fish & Wildlife Foundation's (NFWF) Maine Salmon Program to purchase the development rights under a conservation easement to be held by the SVCA on the entire 64 acres of the property. In addition, the easement specifies that the Happy Farm will remain a working farm and that the salmon habitat will be protected with a 200-foot buffer along the entire 2,200 feet of the property's Sheepscot River frontage. Pat and Robin Chase received additional assistance for the acquisition from the Maine Department of Agriculture's Farms for the Future program, administered by Coastal Enterprises, Inc., which helped the Chases create a business plan for their farming operations.

The closing for this sale was truly a family affair. Present were Lydia, the spry, sharp 87-year old matriarch, her brother, Dick Atwood, her son and financial advisor, David Chase, as well as the new owners, Robin and Pat Chase. Both the family and the SVCA are extremely pleased with the outcome. At the signing ceremony, the Chases expressed delight over the fact that the conservation easement will protect the farm in perpetuity. In addition, Pat and Robin have indicated their interest in operating the farm as an educational demonstration project for the nearby Whitefield School.

For more information contact Michael Herz at Sheepscot Valley Conservation Association, P.O. Box 125, Alna, Maine 04535 or (207) 586 - 5616. email - svca@lincoln.midcoast.com.

(Continued from page 5)

construction of a stable, concrete dam outlet on the lower basin of Daigle Pond, as well as repair to the causeway culvert separating the two basins. This work marked important efforts in bringing the Pond back to historic water levels, thereby decreasing bank erosion, and creating viable habitat for the Pond's fishery.

Outlet Structure

Several residential areas were targeted as being sources of NPS. Included were multiple driveway projects involving regrading, side ditching, and reseeding, including extensive erosion control work at the Holy Family Church. Some unique practices were also utilized, including the installation of a box culvert and the burial of roof drainpipes. At the Woods' residence, lining an eroding waterway with riprap was a priority in order to stabilize the banks and prevent the streambed from altering its course.

One final project completed under this grant included the construction of a modified Nutrient and Sediment Control System (NSCS) in the fields above Daigle Pond. Farmer Roland Caron wanted to be a part of the water quality solutions surrounding the Pond, and so agreed to help filter cropland run-off at the source by donating a portion of his fields for the construction of the NSCS.

Although this grant saw changeover in staff and key project personnel, and endured not less than several roadblocks on its way to completion, it finally did come to a successful end in 2002, 3 years after its projected completion date. Indeed, the Daigle Pond Demonstration Project has, overall, accomplished its goals of promoting and accelerating the use of Best Management Practices and other validated techniques among the various user groups within the Daigle Pond Watershed. Not only were local land users able to complete the majority of the tasks set before them under the guidelines of this grant, some of them were prompted to take action on their own, further showing their commitment to eliminating significant sources of NPS pollution within Daigle Pond. One land use that continues to make significant changes in its management of the land surrounding the Pond is agriculture. Through partnerships and cost-share programs with the USDA Natural Resources

(Continued on page 7)

Nutrient Control Structure

(Continued from page 6)

Conservation Service (NRCS) and Farm Service Agency (FSA), several nutrient management and cropland nutrient retention activities have and will be taking place outside of this grant's specifications, truly a sign of a successful goal! It stands as a testament to what can be accomplished for the sake of water quality. The residents of Daigle Pond should be very proud of all the work and effort put forth by volunteers over the years for the betterment of water quality within the Pond!

For more information contact Heidi Royal at St. John Valley SWCD, 139 Market St. Suite 106,, Ft. Kent, ME 04743 or 834-3311 #3.

Phosphorus Doesn't Migrate in Ground Water? Better Think Again!

USGS scientists have been studying the long-term migration of phosphorus in a subsurface plume of treated sewage at the Toxic Substances Hydrology Program's research site located in Cape Cod, Massachusetts. The ground-water contamination resulted from 60 years of disposal of treated sewage to infiltration ponds at the Massachusetts Military Reservation. Phosphorus is a common constituent of agricultural fertilizers, manure, and organic wastes in sewage and industrial effluent. Excess phosphorus in lakes is a common cause of eutrophication. The observed extent of the phosphorus plume and the interaction of the plume with Ashumet Pond, a glacial kettle pond, has challenged scientists to re-evaluate their understanding of the mobility of phosphorus in ground water and of interactions between ground water and surface water.

- **Phosphorus Mobility** - In the past, ground-water scientists thought that phosphorus in ground water migrated little and hence was of minimal ecological concern. Years of monitoring data on phosphorus concentrations in the plume of treated sewage on Cape Cod has shown that phosphorus does migrate in ground water, raising concerns that phosphorus-containing ground water discharging into Ashumet Pond may accelerate the eutrophication of the pond. USGS scientists are using their new understanding of the migration of phosphorus in ground water to predict the phosphorus load to Ashumet Pond from the sewage plume. The Massachusetts Department of Environmental Protection (DEP) is using these results to develop technical guidance concerning wastewater disposal to ground water. The DEP is concerned that land disposal of wastewater through infiltration basins and septic leaching fields can lead to discharge of phosphate-enriched ground water to sensitive lakes and streams. USGS scientists have assisted State resource managers in preparing guidelines for locating onsite wastewater disposal so that discharge of phosphorus into streams, ponds, and coastal waters will be minimized.

- **Ground Water and Lakes** - On the basis of past knowledge, scientists expected the phosphorus plume to discharge into the pond over a broad area in a cove on the western side of the pond. Monitoring data have shown that the phosphorus plume rises steeply upward and discharges to the pond in a narrow area within 100 feet of shore. This pattern of discharge, in which the greatest inflow is at the shoreline, has been reported in other lake studies by USGS scientists. Toxics Program scientists are working closely with the Air Force Center for Environmental Excellence and its contractors to design a remediation strategy that is based on a sound scientific understanding of phosphorus fate and transport. Actions to limit phosphorus discharge to the pond are now being focused on the small discharge area rather than on the much larger plume up gradient of the pond. Treating the discharge area is expected to be a more cost-effective approach that will provide the maximum benefit to the pond's ecosystem.

Selected References on Phosphorus in the Sewage Plume

Bussey, K.W., and Walter, D.A., 1996,

Spatial and temporal distribution of specific conductance, boron, and phosphorus in a sewage-contaminated aquifer near Ashumet Pond, Cape Cod, Massachusetts: U.S. Geological Survey Open-File

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Sewage plume in a sand and gravel aquifer, Cape Cod, Massachusetts: U.S. Geological Survey Water-Supply Paper 2218, 28 p.

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Simulation of phosphate transport in sewage-contaminated groundwater, Cape Cod, Massachusetts: Applied Geochemistry, v. 11, no. 1-2, p. 317-324.

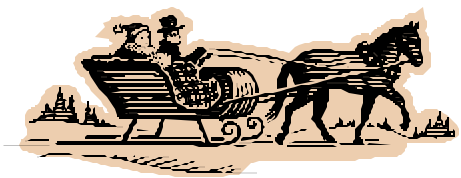
Stollenwerk, K.G., and Parkhurst, D.L., 1999,
Modeling the evolution and natural remediation of a ground-water sewage plume, *in* Morganwalp, D.W., and Buxton, H.T., eds., U.S. Geological Survey Toxic Substances Hydrology Program--Proceedings of the Technical Meeting, Charleston, South Carolina, March 8-12, 1999--Volume 3 of 3--Subsurface Contamination from Point Sources: U.S. Geological Survey Water-Resources Investigations Report 99-4018C, p. 371-382.

Walter, D.A., and LeBlanc, D.R., 1997,
Geochemical and hydrologic considerations in remediating phosphorus-contaminated ground water in a sewage plume near Ashumet Pond, Cape Cod Massachusetts: U.S. Geological Survey Open-File Report 97-202, 20 p.

Walter, D.A., LeBlanc, D.R., Stollenwerk, K.G., and Campo, K.W., 1999,
Phosphorus transport in sewage-contaminated ground water, Massachusetts Military Reservation, Cape Cod, Massachusetts, in Morganwalp, D.W., and Buxton, H. T., eds., U.S. Geological Survey Toxic Substances Hydrology Program--Proceedings of the Technical Meeting, Charleston, South Carolina, March 8-12, 1999--Volume 3 of 3--Subsurface Contamination from Point Sources: U.S. Geological Survey Water-Resources Investigations Report 99-4018C, p. 305-315.

Walter, D.A., Rea, B. A., Stollenwerk, K.G., and Savoie, Jennifer, 1996,
Geochemical and hydrologic controls on phosphorus transport in a sewage-contaminated sand and gravel aquifer near Ashumet Pond, Cape Cod, Massachusetts: U.S. Geological Survey Water-Supply Paper 2463, 89 p. (supercedes USGS Open-File Report 95-381).

From the following web site http://toxics.usgs.gov/highlights/phosphorous_migration.html



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fish. Mercury, which originates from air transport from power generating facilities and incinerators, mining, natural rock weathering and other sources, was cited in approximately 2,240 of the nation's 2,800 fish consumption advisories reported in 2000 and is reported as a leading cause of impairment in U.S. lakes and estuaries.

According to G. Tracy Mehan, EPA Assistant Administrator for Water, this report points out the need for more effective controls to address the nation's water quality problems, especially those originating from diffuse, non-permitted sources such as runoff from agricultural and urban areas, as well as air deposition. As in the past, these non-point sources continue to dominate as sources of pollution. "EPA and the states need to work together as partners to solve this problem and implement more effective solutions," said Mehan.

EPA is working to improve identification and cleanup of impaired waters through the Clean Water Act Section 303(d) program. This program calls for participation of the public in the identification of impaired waters and in the development of pollution "budgets" used to restore the health of those waters. EPA is also developing a national monitoring strategy to improve water quality assessment and reporting and ensure that state water quality findings are comprehensive and comparable among states and over time. Under the Clean Water Act, states have primary responsibility for water quality monitoring.

This 2000 National Water Quality Inventory is the 13th in a series published since 1975. New EPA guidance issued in November 2001 calls for future reports to include information on impaired waters as reported by the states under Section 303(d) of the Clean Water Act.

The "National Water Quality Inventory: 2000 Report" is available at www.epa.gov/305b/2000report

A new tool for evaluating stormwater BMP effectiveness

The database provides access to BMP performance data in a standardized format for over 190 BMP studies conducted over the past fifteen years. The database may be searched and/or downloaded on this Web site, and is also available on CD-ROM. Additional BMP studies are currently being prepared for the database. The database was developed by the Urban Water Resources Research Council (UWRRC) of ASCE under a cooperative agreement with the US Environmental Protection Agency.

FMI http://www.bmpdatabase.org/

Stormwater Phase II Update

The Maine DEP has finished deliberations with stakeholder groups on proposed general permits for construction activities and regulated municipal separate storm sewer systems (MS4s). As of late November, staff at DEP is still developing Fact Sheet information and preparing the drafts to submit to EPA. The goal is to have a Construction General Permit issued by February 17, 2003 and an MS4 General Permit issued by March 10, 2003. Drafts of both general permits will be issued for a 30 day public comment period before those dates. The actual date they will be issued is pending the EPA review. Sign off by the Attorney General's office will also be required before final issuance of the permits.

For more information contact David Ladd at 207/287-5404 or david.ladd@state.me.us. Also check out DEP's web site for Stormwater Phase II information http://www.state.me.us/dep/blwq/stormwtr/index.htm

Space Technology and Landuse planning

While space technology was undergoing its spectacular birth during the 1950s and '60s, and visionaries were predicting the spread of human colonies into space, another kind of human colony was spreading rapidly--right here on Earth!

It was the dawn of the modern suburb, a time of post-war prosperity when housing developments popped up across the landscape like mushrooms after a rain.

A half-century later, we now understand that many environmental problems accompany the outward spread of cities: fragmenting and destroying wildlife habitat, for example, and discharging polluted runoff water into streams and lakes.

The emerging space technology of the 1950s has grown along with our cities. As you read this today, dozens of high-tech satellites are circling our planet, gathering terabytes of scientific data about the environment. These data provide a unique "big picture" view of the effects of urban sprawl.

Unfortunately, many city planners still don't have access to that big picture.

"Currently there's no good end-to-end system for getting useful satellite data on the impacts of urban sprawl into the hands of local decision makers," says Chet Arnold, associate director of the Center for Land-use Education and Research at the University of Connecticut (UConn). But he and his colleagues at UConn are working with NASA to change that. They've started a project called NAUTILUS to provide city planners satellite data quickly and in a form that non-scientists can understand.

"NAUTILUS is one of seven Regional Earth Science Application Centers (or "RESACs") around the country funded by NASA," says Rodney McKellip, who manages the RESAC program from the Stennis Space Center in Mississippi. Why NASA? The Earth Science Enterprise of NASA is responsible for many of those satellites circling the earth, and they are used to fulfill NASA's mission *to understand and protect our home planet*. "RESAC was started in 1998," continues McKellip, "as a way to get vital Earth science information into the hands of local and regional decision makers."

Currently, the NAUTILUS team is developing their remote-sensing tools in four test regions in Connecticut, Massachusetts, Maine, and New Jersey. The local public officials in these regions are making their information needs known, and the scientists are learning to format the satellite data in ways that meet those needs: color-coded maps, for example, or time-lapse animations

Because humans are so visually oriented, such graphics can communicate lots of complex information in a quick, intuitive way. Simply watching a 30-year animation that shows your city rapidly engulfing the landscape can be an eye-opening experience.

"We all sat there a little stunned," says Christine Nelson, recalling the first time she and her fellow city officials were shown animations of historical city growth. Nelson, who is the director of the land use department for the Town of Old Saybrook, Connecticut, participated in a related UConn program called Nonpoint Education for Municipal Officials (NEMO).

The satellite record gives a compelling view of the past, but what about the future? After all, it's the future consequences of land use that city planners must contemplate.

One tool that the NAUTILUS researchers are using is like a computerized "crystal ball." It's a software package called CommunityViz (based on the commercial map-viewing program ArcView) that lets city planners envision a hypothetical future of their city, assuming that it grew according to current zoning patterns. They can view simple maps, color-coded for environmental impacts, or they

(Continued on page 10)

(Continued from page 9)

can choose to "fly through" a photo realistic 3D map of their future city to get a more visceral sense of things to come. More importantly, it lets them make changes and view the likely outcome of different growth scenarios.

More-sophisticated techniques can wring all kinds of useful numbers from satellite data: estimates of water-quality degradation due to development, for example. Hard numbers like these are crucial for making and justifying the tough decisions public officials face.

In the cities involved with the NEMO and NAUTILUS pilot projects, these accessible forms of satellite data have already had an impact on decision making.

Nelson offers this anecdote from her own Town of Old Saybrook: "Using these new satellite-based tools, the planning commission recently realized that huge tracts of unfragmented forest will be interlaced with paved roads as residential development sprawls into the relatively undeveloped northwest quarter of town."

Such "forest fragmentation" can cause problems. "Forest fragmentation occurs when large, continuous forests are divided into smaller blocks, either by roads, clearing for agriculture, urbanization, or other human development," explains Arnold. "Increased fragmentation due to urban development poses a threat to biodiversity primarily in animal populations, as their habitats are chopped up (fragmented) into smaller and smaller pieces."

To avoid these problems near the Town of Old Saybrook, "the planning commission (inspired by the satellite data) is spearheading modifications to the comprehensive plan of zoning regulations," notes Nelson.

Bringing together the information for these maps also means working out a lot of technical nitty-gritty. There are dozens of Earth-observing satellites: Terra, Aqua, Landsat, SPOT and IKONOS, for example. Each carries its own suite of scientific instruments. Which data should the NAUTILUS system use? And how can the 30-year satellite record--taken from a series of satellites with different properties--be integrated into a consistent record of changes in the landscape during that time?

The NAUTILUS program is working these details out so that city planners don't have to. If the project is successful, other cities will soon join Old Saybrook in using satellites to better understand the environmental impact of humanity's expanding "colonies" here on Earth.

This article from the following web site: http://science.nasa.gov/headlines/y2002/11oct_sprawl.htm?friend

National Management Measures to Control NPS

The comment period for the National Management Measures to Control Nonpoint Source Pollution from Urban Areas-Draft, EPA 842-B-02-003, July, 2002 has been extended to January 15, 2003. The Federal Register Notice announcing the extension can be found at:

EPA November 12 Federal Register: http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2002/02-28694.htm

The document can be downloaded from our web site at: http://www.epa.gov/owow/nps/urbanmm/index.html

The National Management Measures to Control Nonpoint Source Pollution from Urban Areas is a draft technical guidance and reference document for use by State, local, and tribal managers in the implementation of nonpoint source pollution management, programs. It contains information on the best available, economically achievable means of reducing pollution of surface and ground water from urban areas.

2002 Integrated Water Quality Monitoring & Assessment Report

Although the public comment period has ended, anyone interested in checking out the new 2002 Integrated Water Quality Monitoring and Assessment Report, can do so by checking it on DEP's web site (address at end of article).

The Department of Environmental Protection has prepared the 2002 Integrated Water Quality Monitoring and Assessment Report for submission to the U.S. Environmental Protection Agency as required in Sections 305(b) and 303(d) of the Clean Water Act, and in fulfillment of the reporting requirements of 38 M.R.S.A. § 464(3)(A) of the State's Water Classification Program. This report is available for public comment **until November 1, 2002.** Reviewers of the document should pay particular attention to the new listing methods required by the USEPA for this report, as they differ substantially from methods used in previous reports. These methods are described in Part I of the document.

The report is downloadable in five separate pdf files and can be found at http://www.state.me.us/dep/blwq/comment.htm

Calendar of Events

December 12, 2002. Maine Rural Developments Council's 12th Annual Policy Forum "The Future of Rural Maine". Augusta Civic Center. FMI Rachel Bain 207/581-3182 or rachel.bain@umit.maine.edu

January 15 & 16, 2003. Fourth Annual Meeting of the Northeast Aquatic Plant Management Society. Sturbridge MA. FMI contact JoAnn Bianco 570/836-5751 ext. 101 or jbianco@cygnetenterprises.com

February 24-28, 2003. 34th Annual Conference & Expo of the International Erosion Control Association. Las Vegas, Nevada. FMI www.ieca.org or 970/879-3010.

March 19-21, 2003. 3rd International Conference on Pharmaceuticals and Endocrine Disrupting Chemicals In Water. Minneapolis, Minnesota. Sponsored by National Groundwater Association. FMI www.ngwa.org, 800/551-7379.

March 26, 2003. MainE Stream Summit (MESS 2003). Bowdin College. FMI MaryLee Haughwout 207/822-6427 or marylee.a.haughwout@state.me.us.

April 17, 2003. Maine Water Conference 2003. Augusta Civic Center. FMI www.umaine.edu/WaterResearch or 207/581-3244.

July 26-30, 2003. Annual Soil & Water Conservation Society Conference. Spokane, Washington. FMI www.swcs.org.

Resources Available

The Natural Resources Defense Council (NRDC) just released a report titled, " Out of the Gutter, Reducing Polluted Runoff in the District of Columbia. NRDC recommends the use of Low Impact Development practices as one of the major ways to achieve this goal.

Although the report was written specifically for D.C., it has applicability for most municipalities and communities. http://www.nrdc.org/water/pollution/gutter/gutterinx.asp

Also of interest is the Reducing Combined Sewer Overflows, Toward Clean Water in Washington, D.C.

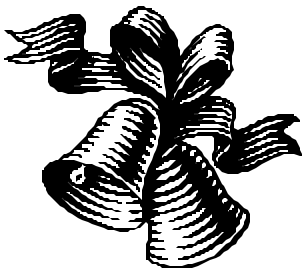
This report also advocates the use of LID practices to reduce combined sewer overflows (CSOs) in the District of Columbia. It is available at: http://www.puaf.umd.edu/faculty/papers/nelson/CSO_Complete.pdf

Researchers Release First of Its Kind Sprawl Report (Raleigh News and Observer 10/18)

Two planning professors say they have come up with the first detailed measure of sprawl, which they used to rank 83 metropolitan areas nationwide. Previous efforts to define sprawl relied on simple measures, such as the number of residents per square mile. This study used a more complicated definition: low-density development with homes and businesses rigidly separated, struggling downtowns and almost total dependence on cars to get around. In total 22 variables were tabulated, such as how close people live to schools and stores and how far people live from downtown. Their report is thick with numbers and includes 55 pages explaining the calculations. The report was released through Smart Growth America, a national coalition of anti-sprawl groups. Smart Growth America, the U.S. Environmental Protection Agency and several foundations helped underwrite the study. To see the complete report, go to www.smartgrowthamerica.org/sprawlindex/sprawlindex.html .

Web Sites of Interest

A new report titled "Paving Our Way to Water Shortages: How Sprawl Aggravates Drought," is available on the web at http://www.americanrivers.org/landuse/sprawldroughtreport.htm



This newsletter is prepared especially of those involved in nonpoint source pollution issues. It is funded through an EPA 319 Clean Water Act Grant. If you have any announcements, comments or items for the Nonpoint Source Times, or if you would like to be added to the mailing list, please call or write:

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Clean water starts with you!

EPA has declared March 2003 Nonpoint Source Month.

EPA is making plans to produce outreach materials for the month. Little detail is available at this date, but if you are interested in keeping up on this project, please contact Kathy Hoppe, Maine DEP, 207/764-0477, Kathy.m.hoppe@state.me.us.

In addition, EPA has declared April Stormwater month and will also develop materials for this event.

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